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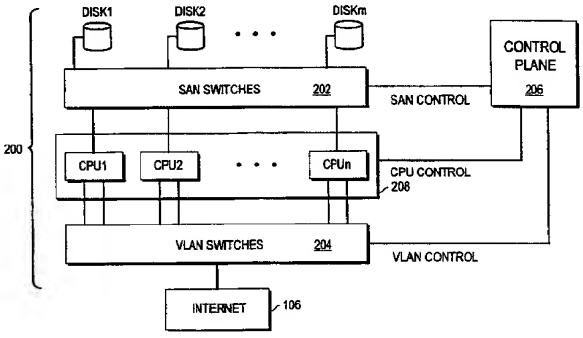
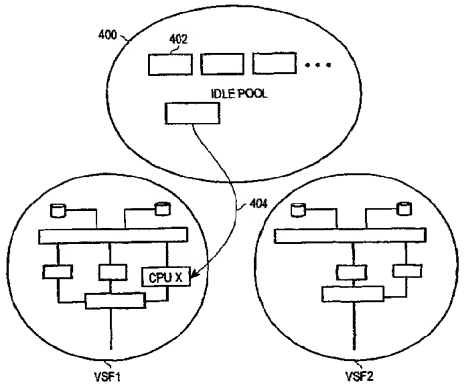
(54) Title: EXTENSIBLE COMPUTING SYSTEM





(57) Abstract: Methods and apparatus providing a dynamically sized, highly scalable and available server farm are disclosed. A Virtual Server Farm (VSF) is created out of a wide scale computing fabric ("Computing Grid") which is physically constructed once and then logically divided up into VSFs for various organizations on demand. Each organization retains independent administrative control of a VSF. A VSF is dynamically firewalled within the Computing Grid. An allocation and control of the elements in the VSF is performed by a Control Plane connected to all computing, networking, and storage elements in the computing grid through special control ports. The internal topology of each VSF is under control of the Control Plane. No physical rewiring is necessary in order to construct VSFs in many different configurations, including single-tier Web server or multi-tier Web-server, application server, database server configurations. Each tier of a multi-tier VSF (e.g. Web server tier, application server tier, database server tier, etc) can be dynamically sized based on the load on the servers in that particular tier. Storage devices may include a plurality of pre-defined logical blueprints that are associated with roles that may be assumed by the computing grid elements. Initially, no computing element is dedicated to any particular role or task such as Web server, application server, database server, etc. The role of each computing element is acquired from one of a plurality of pre-defined, stored blueprints, each of which defines a boot image for the computing elements that are associated with that role.

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Inte tional Application No
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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
INSPEC, IBM-TDB, COMPENDEX, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 750 256 A (DATA GENERAL CORP) 27 December 1996 (1996-12-27)	1,2,5, 8-14,17, 22, 24-26, 29, 32-37, 49,51
Y	abstract	3,4,15, 27,28, 38,40, 41,45
A	page 2, line 6 - line 44	3,4,6,7, 15,16, 18-21, 23,27, 28,30, 31, 38-48,50
	page 3, line 24 -page 5, line 35	

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Ecolivet, S.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.

X	RADEK VINGRALEK, YURI BREITBART, GERHARD WEIKUM: "SNOWBALL: Scalable Storage on Networks of Workstations with Balanced Load" DISTRIBUTED AND PARALLEL DATABASES, vol. 6, no. 2, April 1998 (1998-04), pages 117-156, XP002162201 Dordrecht, The Netherlands	1,2,4,5, 8,10-12, 15-17, 19,25, 26, 28-30, 33-35, 38-40, 45,46,51
A	abstract	3,6,7,9, 13,14, 18, 20-24, 27,31, 32,36, 37, 41-44, 47-50
	page 117, line 1 -page 119, line 30 page 120, line 1 - line 7 page 120, line 41 -page 121, line 4 page 122, line 21 -page 125, line 1 page 129, line 31 - line 39 page 130, line 27 - line 37 page 132, line 22 -page 133, line 5; figure 4 page 136, line 8 -page 137, line 7	

X	US 5 574 914 A (HANCOCK PETER J ET AL) 12 November 1996 (1996-11-12)	1-5,10, 23, 25-27, 29,30, 42,48,51
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Y	abstract; figures 1,2,4,5,7	3,4,27, 28,41,45
	column 8, line 9 - line 55 column 10, line 7 - line 12 column 10, line 23 - line 35 column 12, line 44 - line 49 column 13, line 7 - line 12 column 14, line 13 - line 20 column 14, line 48 -column 15, line 31 column 16, line 41 - line 50 column 20, line 33 -column 22, line 27	

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

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